DETAILED ACTION

1. The amendment filed 1/25/2010 has been entered. Claims 2 and 19 have been cancelled. Claims 1, 3-18 and 20-25 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 3, 5-8, 12, 14-16, 18, 21 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar et al (US Patent No. 5,990,928) in view of Chobotov (Orbital Mechanics).

Sklar et al teaches:

Re claim 1. A method for determining when a moving, airborne mobile platform will enter or exit at least one satellite coverage region, said method comprising:

determining a plurality of boundary coordinates that define a satellite coverage region perimeter (column 11, lines 2-4), the boundary coordinates taking into consideration latitude and longitude to define a three dimensional spatial volume defined by the satellite coverage region (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is within the coverage area based on the latitude and

longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

monitoring a position of the mobile platform and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3); and

determining the proximity of the mobile platform to the satellite coverage region perimeter, taking into account a current latitude and longitude of the mobile platform (blocks 64 and 66, Figure 3; column 13, lines 10-15).

Re claim 12. A system for determining when a moving, airborne mobile platform will enter or exit at least one satellite coverage region, said system comprising:

a database adapted to store boundary coordinates that define a satellite coverage region perimeter (region controller, column 4, lines 9-18), the boundary coordinates taking into consideration latitude and longitude to define a three dimensional spatial volume defined by the satellite coverage region perimeter (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is within the coverage area based on the latitude and longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

a navigational system on board the mobile platform adapted to monitor a position and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3); and

an on board server system (the inherent hardware and software) adapted to:

communicate with the database and the navigational system (column 4, lines 9-18); and

to determine the proximity of the mobile platform to the satellite coverage region perimeter (blocks 64 and 66, Figure 3; column 13, lines 10-15).

Re claim 18. A method for determining an approximate time of arrival of an airborne mobile platform at one or more satellite coverage area boundaries, said method comprising:

determining a plurality of boundary coordinates that define a satellite coverage region perimeter, the boundary coordinates taking into consideration latitude and longitude to define a three dimensional spatial volume defined by the satellite coverage region (coverage areas 26 and 30, Figure 1; latitude and longitude input into region control unit 44, Figure 2; and block 64, Figure 3. The system determines whether it is within the coverage area based on the latitude and longitude of the aircraft, thus the system must know the coordinates of the coverage areas to execute this comparison.);

storing the boundary coordinates in a database accessible by a server system on board the mobile platform (coverage areas are stored in region controller, column 4, lines 9-18);

monitoring a position and an altitude of the mobile platform as the mobile platform moves along a travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3);

determining the proximity of the mobile platform to the satellite coverage region perimeter (blocks 64 and 66, Figure 3; column 13, lines 10-15); and

determining a time-to-boundary measurement of the mobile platform to indicate an approximate time until the mobile platform will arrive at the satellite coverage area boundary (column 13, lines 10-15).

Sklar et al fails to specifically teach: **(re claims 1, 12 and 18)** the boundary coordinates taking *altitude* into consideration to define a three dimensional spatial volume defined by the satellite coverage region; and **(re claim 1)** taking *altitude* of the mobile platform into account to determine the proximity of the mobile platform to the satellite coverage region perimeter.

Chobotov teaches, at Figure 15.2 and equation 15.3, calculating the radius of the coverage circle at sea level for a satellite to determine the boundaries of a satellite's coverage region at sea level. One of ordinary skill in the art would recognize that the coverage circle can be calculated at any altitude by modifying Earth's radius (r_e) in equation 15.3 to reflect the altitude above the center of the Earth.

In view of Chobotov's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the method as taught by Sklar et al, **(re claims 1, 12 and 18)** the boundary coordinates taking *altitude* into consideration to define a three dimensional spatial volume defined by the satellite coverage region; and **(re claim 1)** taking *altitude* of the mobile platform into account to determine the proximity of the mobile platform to the satellite coverage region perimeter;

since Chobotov teaches the distance of a point of interest from the center of the Earth is used to calculate the coverage area of a satellite serving that point of interest.

Sklar et al further teaches:

Re claim 3. Wherein the method further comprises storing the boundary coordinates in a database accessible by a server system on board the mobile platform (coverage areas are stored in region controller, column 4, lines 9-18).

Re claims 5 and 21. Wherein said monitoring a position of the mobile platform comprises periodically determining a latitude, a longitude and an altitude of the mobile platform as the mobile platform moves along the travel path (latitude, longitude and altitude, Figure 2; and block 64, Figure 3).

Re claims 6, 14 and 22. Wherein said determining the proximity of the mobile platform to the satellite coverage region perimeter comprises periodically comparing the position of the mobile platform to the boundary coordinates (block 66, Figure 3).

Re claims 7 and 15. Wherein the method further comprises determining a time-to-perimeter measurement of the mobile platform to indicate an approximate time that the mobile platform will remain within the satellite coverage region (column 13, lines 10-15).

Re claims 8 and 16. Wherein the method further comprises determining a time-to-perimeter measurement of the mobile platform to indicate an approximate time before the mobile platform will enter the satellite coverage region (column 13, lines 10-13)

4. **Claims 4, 13 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar et al (US Patent No. 5,990,928) as modified by Chobotov (Orbital Mechanics) as applied to claims 1, 12 and 18 above, and further in view of Ashton et al (US Patent No. 6,434,682).

The teachings of Sklar et al as modified by Chobotov have been discussed above. Sklar et al as modified by Chobotov fails to specifically teach: **(re claims 4 and 20)** wherein said storing the boundary coordinates comprises at least one of: storing the coordinates in a look up table; and storing the coordinates in a link list; **(re claim 13)** wherein the database includes at least one of a look up table and a link list.

Ashton et al teaches, at column 5, lines 14-17, that look up tables and linked lists are suitable and well known data structures for storing data.

In view of Ashton et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the method and system as taught by Sklar et al as modified by Chobotov, **(re claims 4 and 20)** wherein said storing the boundary coordinates comprises at least one of: storing the coordinates in a look up table; and storing the coordinates in a link list; **(re claim 13)** wherein the database includes at least one of a look up table and a link list; since Ashton et al teaches that these data structures are suitable and well known for storing data.

5. **Claims 9-11, 17 and 23-25** rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar et al (US Patent No. 5,990,928) as modified by Chobotov (Orbital Mechanics) as applied to claims 1, 12 and 18 above, and further in view of Miller et al (US Patent No. 5,956,644).

The teachings of Sklar et al as modified by Chobotov have been discussed above. Sklar et al as modified by Chobotov fails to specifically teach: **(re claims 9 and 23)** wherein the method further comprises mapping a plurality of signal strength data for the satellite coverage region; **(re claims 10, and 24)** wherein the method further comprises: identifying signal fade areas within the satellite coverage region utilizing the signal strength data; and determining the proximity of the mobile platform to the fade area; **(re claims 11 and 25)** wherein the method further comprise: identifying an edge effect area within the satellite coverage region utilizing the signal strength data; and determining the proximity of the mobile platform to the edge effect area; and **(re claim 17)** wherein the on board server is further adapted to: map a plurality of signal strength data throughout the satellite coverage region; identify a fade area within the satellite coverage region where the signal strength is significantly weaker than an average signal strength throughout the satellite coverage region; and determine the proximity of the mobile platform to the fade area.

Miller et al teaches, at column 12, line 61 through column 13, line 2, that knowledge of the roll off patterns of satellite beams can be used to determine when an airborne system will hand-off between two satellites (column 3, lines 23-44).

In view of Miller et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the system and method as taught by Sklar et al as modified by Chobotov, **(re claims 9 and 23)** wherein the method further comprises mapping a plurality of signal strength data for the satellite coverage region; **(re claims 10, and 24)** wherein the method further comprises: identifying signal fade areas within the satellite coverage region utilizing the signal strength data; and determining the proximity of the mobile platform to the fade area; **(re claims 11 and 25)** wherein the method further comprise: identifying an edge effect area within the satellite coverage region utilizing the signal strength data; and determining the proximity of the mobile platform to the edge effect area; and **(re claim 17)** wherein the on board server is further adapted to: map a plurality of signal strength data throughout the satellite coverage region; identify a fade area within the satellite coverage region where the signal strength is significantly weaker than an average signal strength throughout the satellite coverage region; and determine the proximity of the mobile platform to the fade area; since Miller et al teaches that knowledge of the roll off patterns of satellite beams is useful for determining the time allowed for hand-offs between satellites.

Response to Arguments

6. Applicant's arguments, see page 9, filed 1/25/2010, with respect to the objections to the claims have been fully considered and are persuasive. The objections of claims 4, 7, 8, 15, 16 and 18 have been withdrawn.

7. Applicant's arguments, see pages 9-13, filed 1/25/2010, with respect to the rejection(s) of claim(s) 1-25 under 35 U.S.C. §102 and §103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sklar, Chobotov, Ashton and Miller.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SPENCER PATTON whose telephone number is

(571)270-5771. The examiner can normally be reached on Monday-Thursday 7:30-5:00; Alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571)272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SPENCER PATTON/
Examiner, Art Unit 3664
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664